

Executive Summary

The Upper East Coast (UEC) Planning Area is projected to experience substantial population growth by the year 2025. Population is forecast to increase by over 50 percent from year 2000 numbers to almost a half a million people, with expansion occurring mostly in the coastal areas. Conversely, agriculture—primarily citrus located in the western portion of the region—is projected to decrease slightly due to current industry markets, and development pressure. In addition to human needs, there are numerous coastal and inland environmental resources within this region that depend on water resources for sustainability. It is the intent of the Florida Legislature to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and to protect and enhance natural systems. This region receives 55 inches of rainfall annually on average, but with a wide range seasonally and annually. Meeting human water demands, while addressing the water needs of the environment, makes development of proactive water supply strategies imperative to the economic and environmental sustainability of the area.

The first *Upper East Coast Water Supply Plan* was completed in 1998. This 2004 Update builds on knowledge gained in the 1998 Plan, assumptions in the 1998 Plan, as well as activities that have taken place since its adoption. Water users, utilities, the environmental community and local governments should be recognized for their proactive efforts, including development of alternative water sources and environmental restoration efforts. These contributions help to ensure that water needs of this region will be met.

The South Florida Water Management District considered the interests and concerns of water users, the environment and other stakeholders in the planning area as paramount, and made great efforts to encourage full participation in developing this Plan. A series of public workshops were held during the plan development process to solicit input. The planning effort provided a forum to weigh projected urban, agricultural and environmental water demands against available supplies. Public participation has significantly refined and improved this Plan.

Eight water source options were identified to address the water supply needs of the UEC Planning Area through at least 2025. These options either make additional water available from historically used sources or other sources, or provide additional management through conservation and storage of the options. The options are (in no implied priority):

- Aquifer storage and recovery
- Conservation
- Floridan Aquifer System
- Reclaimed Water
- Reservoirs
- Seawater
- Surface Water
- Surficial Aquifer System

Overall, from a regional perspective, it was concluded that with appropriate management and diversification of water supply sources, there is sufficient water to meet the needs of this region during a 1-in-10 year drought condition through 2025. In addition to the recommendations of this Plan, the Comprehensive Everglades Restoration Plan (CERP) will maximize water resources by addressing issues of timing, retention and freshwater flow regimes to the coastal environmental resources in the planning area, and increase availability of fresh water for future use.

This assessment concluded that existing public water supply and landscape irrigation uses have maximized the use of the Surficial Aquifer, the traditional source of water for urban water needs, in the coastal areas. Increased withdrawals are limited due to potential impacts on wetland systems, and increased vulnerability to saltwater intrusion in the vicinity of public water supply wellfields. In the western portions of the planning area, where surface water from the regional canal system is heavily used for agricultural needs, analysis showed that existing surface water supplies are inadequate to meet existing, as well as future demands. Surface water availability is essentially a function of climate and storage—currently, there are excess amounts during the summer wet season, and insufficient supplies during dry winter months.

The problem of timing is especially illustrated by the impacts of freshwater discharges to environmental systems. Excessive discharges can temporarily decrease the salinity of the estuarine systems, in some cases to essentially fresh water, resulting in the loss of historic seagrass and oyster bed systems. Insufficient freshwater discharges can increase the salinity, in some cases to essentially salt water, resulting in negative environmental impacts. In this region, excess discharges have been a far larger issue.

For public water supply, the scenario that showed the most promise of satisfying projected demands was continued use of the Surficial Aquifer at current levels and continued development of the Floridan Aquifer to meet the growing needs for potable water. The Floridan Aquifer is a saline water source found at depths greater than 600 feet below the land surface in the UEC Planning Area that requires desalination treatment (salt removal) prior to potable use. Most of the coastal utilities have already begun transitioning to the Floridan Aquifer; with 20 percent of the water to meet 2000 potable needs originating from the Floridan Aquifer. The South Florida Water Management District realizes the need for greater understanding of the impact of long-term, sustained withdrawals from this aquifer. Developing a regional Floridan Aquifer water quality groundwater model and related monitoring of the Floridan Aquifer has become a priority in this planning area.

The scenario that showed the most promise of meeting future needs for landscape irrigation was continued use of the Surficial Aquifer at current levels and continued development of reclaimed water to meet growing needs for irrigation water. Additional withdrawals from the Surficial Aquifer for landscape irrigation may be possible on a project-by-project basis. Reuse of reclaimed water however, appears to be a more significant source of irrigation water supply. In 2003, over 40 percent or 8 million gallons per day of the wastewater treated in the region was reused for a beneficial purpose—

mostly for irrigation of residential lots, golf courses, medians and other green space. The remaining 12 million gallons per day of wastewater not developed for reuse is potentially available water. To promote increased use of reclaimed water in the future, local governments and utilities are encouraged to consider establishing mandatory reuse zones, or geographic areas where the use of reclaimed water is required as part of development orders. Development of supplemental sources could be used to increase reuse in some systems.

For agricultural irrigation, predominately citrus, a combination of surface water from the C-23, C-24, C-25 and C-44 canals, supplemented with Floridan Aquifer water, is sufficient to meet the existing and projected needs during a 1-in-10 year drought event. Due to changes in economic conditions in the citrus industry, projections of increases in the 1998 Plan in irrigated agricultural acreage have been reassessed. Growth in overall agricultural demand from 2000 levels is not anticipated. Construction of storage reservoirs proposed in the CERP Indian River Lagoon – South Project will enhance surface water availability and reduce reliance on the Floridan Aquifer. Implementation of voluntary best management practices identified by the citrus industry, continued conversion of seepage/flood irrigation systems to microirrigation, and the use of the existing agricultural mobile irrigation labs can further reduce agricultural water use.

Strong emphasis should be placed on conserving water through implementation of user-specific water conservation plans. Savings can be realized through proactive, cooperative efforts between water users, utilities, local governments and the District. Conservation plans should be multi-faceted, including local government policies, such as water conservation ordinances, public education, retrofits of indoor and outdoor devices, use of alternative water sources and continued emphasis on water conservation in the District's expanded Consumptive Use Permitting Program. Continued use of existing mobile irrigation labs will also support this effort.

Freshwater discharges from the C-23, C-24, C-25 and C-44 canals to the St. Lucie River and Estuary and the Indian River Lagoon pose problems in maintaining a healthy estuarine system. High volume, prolonged freshwater releases from Lake Okeechobee via the C-44 Canal and increased local basin runoff, also have a dramatic effect on water quality and the health of the estuarine system. A minimum flow and level was established for the St. Lucie River and Estuary in 2002. The analysis shows that the MFL is currently being met and no additional actions are required to ensure compliance for at least 20 years into the future. Construction of the CERP Indian River Lagoon – South Project Implementation Report recommendations and the Ten Mile Creek Critical Restoration Project initiated in 2003, will address regional storage and freshwater flows from the watershed; the CERP and possible modifications to the Lake Okeechobee Regulation Schedule will further address freshwater discharges from Lake Okeechobee to the St. Lucie River via the C-44 Canal. Water reservations for the protection of fish and wildlife will be established for the St. Lucie River and southern Indian River Lagoon pursuant to the CERP Indian River Lagoon – South Project Implementation Report.

In contrast to concerns of freshwater encroachment in estuarine systems, the Loxahatchee River has been significantly affected by the creation of the Jupiter Inlet. In addition, construction of the C-18 Canal and installation of drainage projects for agricultural and urban development have lowered water tables and reduced the amount of fresh water available to the Loxahatchee River. These changes have significantly altered natural flow patterns allowing salt water to move further up the river resulting in the displacement of freshwater wetland species by estuarine species. A minimum flow and level was established for the Northwest Fork of the Loxahatchee River in 2002. Implementation of projects in the 2002 Northern Palm Beach County Comprehensive Water Management Plan and recommendations in the 2000 Lower East Coast Regional Water Supply Plan are beginning to address freshwater flows to the Loxahatchee River. Approximately 44,800 acre-feet of storage have been purchased in the L-8 Reservoir, the G-160 Loxahatchee Slough Structure in northeastern Palm Beach County has been completed and construction of the G-161 Northlake Boulevard Structure has begun. In addition to structural improvements that will benefit environmental water supply, establishment of a water reservation for the Northwest Fork of the Loxahatchee River, development of a restoration plan, completion of the CERP North Palm Beach County Part 1 Project Implementation Report and establishment of minimum flows and levels for the tributaries to the Northwest Fork of the Loxahatchee River will further address freshwater timing and flow to this system.

In addition to administrative rule development, structural improvements and restoration plans, local governments and users will play a key role in the successful implementation of this Plan. Examples include adoption of conservation ordinances, homeowner awareness programs, land use decisions and development of water source options by local utilities and users.

The conclusions and recommendations of this 2004 UEC Water Supply Plan are consistent with those of the 1998 UEC Water Supply Plan. Much progress has been made in implementing the recommendations of the 1998 Plan and development of alternative water sources; water users have diversified their supply sources and reduced reliance on the Surficial Aquifer. Most coastal utilities are utilizing the Floridan Aquifer to meet their future needs; reclaimed water use in the areas has increased and offsets use of groundwater; and conversion of agricultural seepage irrigation systems to microirrigation has continued. In addition, significant efforts since 1998 have resulted in strategies and designs for surface water storage to better manage freshwater flows to the coastal resources.

Finally, successful implementation of this Plan will require coordination with other regional and local government planning efforts and include continued public participation in guiding the implementation of recommendations. Looking ahead to 2025, the recommendations outlined in this Plan, in addition to other efforts, should ensure that water resources in this region are prudently managed and available to meet anticipated demands.